

## NISTTech

**FORCE-FREQUENCY MICROSCOPE AND METHOD FOR USING SAME 1ST Provisional Filing title: NANOMECHANICAL PROPERTY MEASUREMENT BY FORCE-FREQUENCY MODULATED ATOMIC FORCE MICROSCOPY (FFM-AFM)**

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**Docket 13-026**

### Abstract

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<p>The AFM imaging mode proposed here is a new high speed frequency modulation technique performed in scanning controlled force AFM modes like force volume or Peak Force Trapping modes. It consists of tracking the changes in the resonance frequency of a higher eigenmode AFM cantilever during scanning as the AFM probe intermittently contacts the sample at a predefined applied maximum force(setpoint). The key measurements are in the form of an eigenmode cantilever resonance frequency and amplitude data sets that can be analyzed to provide quantitative information on the nanomechanical properties of the surface as a function of depth at each oscillation cycle or "tap". The resulting three dimensional insight into the nanomechanical properties of surfaces at such a nano scale is a powerful tool in the development of nanotechnology (advanced materials, MEMS, NEMS, Micro/Nano-fabrication etc.)</p>

### Inventors

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### Status of Availability

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This invention is available for licensing exclusively or non-exclusively in any field of use.

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